Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NATIONAL GUIDELINE CLEARINGHOUSE

General

Guideline Title

Prophylaxis and treatment of venous thromboembolism in patients undergoing treatment for solid tumours.

Bibliographic Source(s)

Alberta Provincial Tumour Program. Prophylaxis and treatment of venous thromboembolism in patients undergoing treatment for solid tumours. Edmonton (Alberta): CancerControl Alberta; 2014 Feb. 19 p. (Clinical practice guideline; no. SUPP-006). [88 references]

Guideline Status

This is the current release of the guideline.

Regulatory Alert

FDA Warning/Regulatory Alert

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- November 6, 2013 – Low Molecular Weight Heparins : The U.S. Food and Drug Administration (FDA) is recommending that health care professionals carefully consider the timing of spinal catheter placement and removal in patients taking anticoagulant drugs, such as enoxaparin, and delay dosing of anticoagulant medications for some time interval after catheter removal to decrease the risk of spinal column bleeding and subsequent paralysis after spinal injections, including epidural procedures and lumbar punctures. These new timing recommendations, which can decrease the risk of epidural or spinal hematoma, will be added to the labels of anticoagulant drugs known as low molecular weight heparins, including Lovenox and generic enoxaparin products and similar products.

Recommendations

Major Recommendations

The following recommendations describe clinical scenarios for which antithrombotic therapy is indicated in patients with cancer. Strong evidence (i.e., phase III clinical trials and randomized controlled trials as well as the latest [2013] American Society of Clinical Oncology [ASCO] clinical practice guideline [Lyman et al., 2013]) was used to inform the recommendations; however, in the absence of strong evidence, lower quality studies (i.e., retrospective case series) were considered only in the context of consensus opinion.

1. Although the use of antithrombotic agents is contraindicated in patients with active life-threatening bleeding, antithrombotic therapy is otherwise relatively safe and most patients are eligible for therapy at the discretion of the treating physician. A clinical algorithm for the use of antithrombotic therapy in patients with cancer is presented in Figure 1 in the original guideline document.
2. *Ambulatory patient treatment for venous thromboembolism (VTE)*. Proximal lower extremity deep vein thrombosis (DVT) and pulmonary embolism (PE) should be considered for antithrombotic therapy. Other VTE should be considered for antithrombotic therapy, based on symptoms and risk factors. In patients for whom antithrombotic therapy is not contraindicated, consider using one of the following:
    - Low molecular-weight heparin (LMWH) (i.e., dalteparin, tinzaparin, or enoxaparin) is the treatment of choice in this setting due to decreased recurrence rates on treatment; however, if the patient has non-dialysis dependent severe kidney failure (estimated glomerular filtration rate [eGFR] 20–30 mL per minute), tinzaparin should be considered the agent of choice (see Table 2 in the original guideline document). Administration is as follows:
        - Dalteparin (200 units per kg subcutaneously [SC] per day for 1 month, then 150 units per kg SC per day)
            - The first month is dosed higher and then reduced as per the CLOT Trial.
        - Enoxaparin (1 mg per kg twice per day [BID] or 1.5 mg per kg SC per day)
            - There is no consensus on dosage for cancer-associated thrombosis because there are no completed phase III trials in cancer patients.
        - Tinzaparin (175 units per kg SC per day)
    - New oral anticoagulant agents (i.e., apixaban, dabigatran, rivaroxaban) have not yet been proven to be efficacious or safe in oncology patients.
    - Although less favored, warfarin (5–10 mg orally per day, then adjust to international normalized ratio [INR] 2–3) may be used, especially in situations where LMWH is contraindicated or if the patient refuses LMWH. Warfarin has been shown to be inferior to tinzaparin and dalteparin in randomized clinical trials. There are no completed phase III trials comparing enoxaparin with warfarin. LMWH or unfractionated heparin (UFH) should be used to bridge warfarin until the INR is in the therapeutic range.
    - There is no consensus on the duration of therapy. Trials using LMWH in cancer patients studied 3 to 6 months of treatment followed by standard of care at the discretion of the treating physician. Standard of care may include cessation of therapy, continuing LMWH, or switching to an oral agent. Patients with metastatic disease will continue to be at high risk for VTE and may be treated indefinitely at the discretion of the treating physician (Lee et al., 2003; Hull et al., 2006).
    - Patients being treated for VTE should be aware of their condition and planned treatment, informed of the signs and symptoms of DVT and PE, as well as side effects of anticoagulation therapy, and instructed to inform other health care providers that they are using antithrombotic therapy. Education should be provided by health care professionals with oncology experience.
3. *Ambulatory patient prophylaxis for VTE*. High risk outpatients (i.e., patients with a risk factor score of 3 or more; see Figure 1 in the original guideline document) may be considered for prophylactic antithrombotic therapy, at the discretion of the treating physician.
    - The recommended prophylactic antithrombotic therapy is LMWH, including any of the following:
        - Dalteparin (5,000 units SC per day)
        - Enoxaparin (40 mg SC per day or 30 mg BID)
        - Tinzaparin (4,500 units SC per day or 75 units per kg per day)
    - Prophylactic anticoagulation is not officially recommended for all ambulatory oncology outpatients by the most recent ASCO guidelines for anticoagulation (Lyman et al., 2013).
    - Patients being considered for prophylaxis with antithrombotic therapy should be informed of their risk of VTE and the signs and symptoms of DVT and PE, as well as side effects of anticoagulation therapy (i.e., risk of bleeding).
    - The presence of a central venous catheter (CVC) in the absence of other risk factors is not an indication for the use of prophylactic antithrombotic therapy.
    - The most recent ASCO guidelines for anticoagulation (2013) recommend extended prophylaxis with LMWH for up to 4 weeks post-operatively be considered for patients undergoing major abdominal or pelvic surgery for cancer who have high-risk features such as restricted mobility, obesity, history of VTE, or additional risk factors (see Table 3 in the original guideline document). In lower-risk surgical settings, the decision on appropriate duration of thromboprophylaxis should be made on a case-by-case basis considering the individual patient (Lyman et al., 2013).
4. *Inpatient treatment for VTE*. Proximal lower extremity DVT and PE should be considered for antithrombotic therapy. Other VTE should be considered for antithrombotic therapy based on symptoms and risk factors.
    - LMWH (i.e., dalteparin, tinzaparin, or enoxaparin) is the treatment of choice in this setting due to decreased recurrence rates on treatment; however, if the patient has severe non-dialysis dependent kidney failure (eGFR 20–30 mL per minute), tinzaparin should be considered the agent of choice (see Table 2 in the original guideline document). Administration is as follows:
        - Dalteparin (200 units per kg SC per day for 1 month, then 150 units per kg SC per day)
            - The first month is dosed higher and then reduced as per the CLOT Trial
        - Enoxaparin (1 mg per kg BID or 1.5 mg per kg SC per day)

        - There is no consensus on dosage for cancer-associated thrombosis as there are no completed phase III trials.
        - For some physicians 1 mg BID or 1.5 mg per kg per day is acceptable (Lee & Levine, 2003; Merli et al., 2001).
    - Tinzaparin (175 units per kg SC per day)
- New oral anticoagulant agents (i.e., apixaban, dabigatran, rivaroxaban) have not yet been proven to be efficacious or safe in oncology patients.
- Although less favored, warfarin (5–10 mg per day orally, then adjust to INR 2–3) may be used, especially in situations where LMWH is contraindicated or if the patient refuses LMWH. Warfarin has been shown to be inferior to tinzaparin and dalteparin in randomized clinical trials. There are no completed phase III trials comparing enoxaparin with warfarin. LMWH or UFH must be used to bridge warfarin until the INR is in the therapeutic range.
- UFH may be used at the discretion of the treating physician under select circumstances only (e.g., when rapid clearance of anticoagulants is desired). UFH is typically given as 80 units/kg intravenously, then 18 units/kg/hour or as per electronic medical record algorithms or validated online dosing calculators based on partial thromboplastin time.
- There is no consensus on the duration of therapy. Trials using LMWH in cancer patients studied 3 to 6 months of treatment followed by standard of care at the discretion of the treating physician. Standard of care may include cessation of therapy, continuing LMWH, or switching to an oral agent. Patients with metastatic disease will continue to be at high risk for VTE and may be treated indefinitely at the discretion of the treating physician (Lee et al., 2003; Hull et al., 2006).
- Patients being treated for VTE should be aware of their condition and planned treatment, informed of the signs and symptoms of DVT and PE, as well as side effects of anticoagulation therapy, and instructed to inform other health care providers that they are using antithrombotic therapy. Education should be provided by health care professionals with oncology experience.
- Patients scheduled for surgery, according to anticoagulation guidelines published in the *Chest* Journal (Gould et al., 2012), should stop LMWH 24 hours prior to surgery or UFH 4 to 6 hours prior to surgery. Therapeutic doses of LMWH and UFH should not be re-started until the high-risk period for bleeding is over at physician discretion (typically at least 3 days post-surgery). Prophylactic LMWH or UFH for DVT prophylaxis can be initiated earlier if hemodynamically stable (often on post-operative Day 1).

5. *Inpatient prophylaxis for VTE*. Patients admitted as inpatients should receive antithrombotic therapy for DVT prophylaxis unless contraindicated. Non-pharmacologic prophylaxis (e.g., compression stockings) and early mobilization should be considered for patients unable to receive pharmacologic agents (i.e., typically those who are actively bleeding).
    - The recommended prophylactic antithrombotic therapy is LMWH, including any of the following:
        - Dalteparin (5,000 units SC per day)
        - Enoxaparin (40 mg SC per day or 30 mg BID)
        - Tinzaparin (4,500 units SC per day or 75 units per kg SC per day)
    - Patients being considered for prophylaxis with antithrombotic therapy should be informed of their risk of VTE and the signs and symptoms of DVT and PE, as well as side effects of anticoagulation therapy, and be provided with options to lower the risk.
    - The presence of a CVC in the absence of other risk factors is not an indication for the use of prophylactic antithrombotic therapy.
6. *Special clinical scenarios*. Described in Table 2 in the original guideline document are various clinical scenarios that can influence the use of antithrombotic agents as treatment or prophylaxis.
7. *Follow-up*. Follow-up visits should ensure that self-injections are administered properly and assess for bleeding complications. Follow-up should occur initially at either one week or one month after starting antithrombotic therapy, and then at six months. A baseline complete blood count (CBC) is required to ensure anticoagulation is safe; severe thrombocytopenia may require dose adjustment or non-antithrombotic alternatives. The first follow-up CBC should be checked within 5 to 10 days of starting either LMWH or UFH to assess for heparin-induced thrombocytopenia (HIT), a rare but life-threatening complication of heparin-based therapy. CBC should be checked at a minimum of monthly intervals.
8. *Complications*. Bleeding is the most common complication of anticoagulation therapy. Major bleeding while on anticoagulation requires immediate cessation of all antithrombotic therapy and presentation to an emergency department where an appropriate treatment algorithm can be initiated. Minor bleeding can be assessed in clinic and may require anticoagulant cessation at the discretion of the physician.
9. *Patient education*. Patients and their care takers should be informed about VTE as well as about its treatment. The benefits of treatment should be weighed against risks. Patients should also be trained in self-injection with the assistance of clinic nurse. Items that should be reviewed include:
    - VTE risk and options to lower the risk; review administration route (i.e., injection vs. oral medication; orals agents are currently not supported in oncology)
    - Symptoms of a blood clot, particularly PE, and what to do if one is suspected
    - Purpose of anticoagulation medication
    - Restrictions when on anticoagulation medication (i.e., alcohol in moderation only) and risks of using/taking anticoagulation medication (i.e., bleeding on an anticoagulant is a medical emergency)
    - Post-thrombotic syndrome

- Blood clot prevention

Clinical Algorithm(s)

An algorithm titled "Algorithm for VTE Prophylaxis and Treatment in Patients with Solid Tumours" is provided in the original guideline document.

Scope

Disease/Condition(s)

Cancer-associated venous thromboembolism (VTE), including deep vein thrombosis (DVT) and pulmonary embolism (PE)

Guideline Category

Management

Prevention

Risk Assessment

Treatment

Clinical Specialty

Hematology

Internal Medicine

Oncology

Intended Users

Advanced Practice Nurses

Nurses

Physician Assistants

Physicians

Guideline Objective(s)

To provide recommendations for physicians, nurses, and other front-line staff on the prophylaxis and treatment of venous thromboembolism (VTE) in patients with cancer, both in the inpatient and ambulatory settings

Target Population

Adults over 18 years of age who are receiving treatment for solid (i.e., non-hematologic) tumours

Note: Included are recommendations for inpatients and outpatients; however, the definition of an outpatient may vary by centre. Different recommendations may apply to pediatric patients or patients receiving treatment for hematological malignancies, such as myeloma.

Interventions and Practices Considered

1. Ambulatory patient treatment for venous thromboembolism (VTE) using low-molecular-weight heparin (LMWH, i.e., dalteparin, tinzaparin, or enoxaparin) or warfarin
2. Dosage and duration of therapy
3. Patient education concerning antithrombotic therapy and signs and symptoms of VTE
4. Ambulatory patient prophylaxis for VTE using LMWH
5. Inpatient treatment for VTE using LMWH, warfarin or unfractionated heparin (UFH)
6. Stopping anticoagulation before surgery
7. Inpatient prophylaxis for VTE using LMWH
8. Consideration for various clinical scenarios that can influence use of antithrombotic agents
9. Follow-up visits including complete blood count (CBC) and assessment for heparin-induced thrombocytopenia (HIT)
10. Treatment of bleeding complications

Major Outcomes Considered

- Risk of cancer-associated venous thromboembolism (VTE)
- VTE recurrence rates
- Survival rates
- Mortality
- Morbidity
- Complication rates
- Incidence of bleeding

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Research Questions

Specific research questions to be addressed by the guideline document were formulated by the guideline lead(s) and Knowledge Management (KM) Specialist using the PICO question format (patient or population, intervention, comparisons, outcomes).

Guideline Questions

- What is the standard of care for ambulatory patients with solid tumours with established venous thromboembolism (VTE)? What is the standard pharmacologic therapy and dosing for the treatment of VTE?
- Among ambulatory patients with solid tumours, who should receive prophylactic antithrombotic therapy for VTE? What is the standard pharmacologic therapy and dosing for the prophylaxis of VTE?
- What is the standard of care for inpatients with solid tumours with established VTE? What is the standard pharmacologic therapy and dosing for the treatment of VTE?
- Among inpatients with solid tumours, who should receive prophylactic antithrombotic therapy for VTE? What is the standard pharmacologic therapy and dosing for the prophylaxis of VTE?
- How should patients be followed during the administration of antithrombotic therapy?
- What are the most common complications of antithrombotic therapy use?

Search Strategy

The National Library of Medicine's MEDLINE and PubMed databases were searched for relevant articles published between 2002 and 2013. In

addition, the American Society of Clinical Oncology (ASCO) and the National Guideline Clearinghouse were searched, respectively, for meeting abstracts published between 2010 and 2013 and guidelines published between 2007 and 2013.

Search terms included "neoplasm" or "cancer" AND "venous thromboembolism" or "thrombosis" AND "thrombosis prophylaxis" or "VTE prophylaxis" and results were limited to randomized controlled trials and clinical trials (phase III-IV) published in English from 2002 to 2013 March 1, as well as meta-analyses published in English from 2008 to 2013 March 1. Studies that did not report outcomes related to the prophylaxis or treatment of VTE were excluded.

Number of Source Documents

This review included 6 clinical practice guidelines, 6 meta-analyses, and 28 randomized controlled trials or phase III clinical studies.

Methods Used to Assess the Quality and Strength of the Evidence

Not stated

Rating Scheme for the Strength of the Evidence

Not applicable

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Evidence was selected and reviewed by a working group comprised of a medical oncologist and a research methodologist from the Guideline Utilization Resource Unit (GURU). A detailed description of the methodology followed during the guideline development process can be found in the GURU Handbook (see the "Availability of Companion Documents" field).

Evidence Tables

Evidence tables containing the first author, year of publication, patient group/stage of disease, methodology, and main outcomes of interest are assembled using the studies identified in the literature search. Existing guidelines on the topic are assessed by the Knowledge Management (KM) Specialist using portions of the Appraisal of Guidelines Research and Evaluation (AGREE) II instrument (http://www.agreetrust.org) and those meeting the minimum requirements are included in the evidence document. Due to limited resources, GURU does not regularly employ the use of multiple reviewers to rank the level of evidence; rather, the methodology portion of the evidence table contains the pertinent information required for the reader to judge for himself the quality of the studies.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Formulating Recommendations

The working group members formulated the guideline recommendations based on the evidence synthesized by the Knowledge Management (KM) Specialist during the planning process, blended with expert clinical interpretation of the evidence. As detailed in the Guideline Utilization Resource Unit Handbook (see the "Availability of Companion Documents" field), the working group members may decide to

adopt the recommendations of another institution without any revisions, adapt the recommendations of another institution or institutions to better reflect local practices, or develop their own set of recommendations by adapting some, but not all, recommendations from different guidelines.

The degree to which a recommendation is based on expert opinion of the working group and/or the Provincial Tumour Team members is explicitly stated in the guideline recommendations. Similar to the American Society of Clinical Oncology (ASCO) methodology for formulating guideline recommendations, the Guideline Utilization Resource Unit (GURU) does not use formal rating schemes for describing the strength of the recommendations, but rather describes, in conventional and explicit language, the type and quality of the research and existing guidelines that were taken into consideration when formulating the recommendations.

The latest (2013) American Society of Clinical Oncology (ASCO) clinical practice guideline was used to inform the current recommendations.

Rating Scheme for the Strength of the Recommendations

Not applicable

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Internal Peer Review

Description of Method of Guideline Validation

This guideline was reviewed and endorsed by the Alberta Provincial Tumour Program.

When the draft guideline document has been completed, revised, and reviewed by the Knowledge Management (KM) Specialist and the working group members, it is sent to all members of the Provincial Tumour Team for review and comment. This step ensures that those intended to use the guideline have the opportunity to review the document and identify potential difficulties for implementation before the guideline is finalized. Depending on the size of the document, and the number of people it is sent to for review, a deadline of one to two weeks will usually be given to submit any feedback. Ideally, this review will occur prior to the annual Provincial Tumour Team meeting, and a discussion of the proposed edits will take place at the meeting. The working group members will then make final revisions to the document based on the received feedback, as appropriate. Once the guideline is finalized, it will be officially endorsed by the Provincial Tumour Team Lead and the Executive Director of Provincial Tumour Programs.

Evidence Supporting the Recommendations

References Supporting the Recommendations

Gould MK, Garcia DA, Wren SM, Karanicolas PJ, Arcelus JI, Heit JA, Samama CM. Prevention of VTE in nonorthopedic surgical patients: antithrombotic therapy and prevention of thrombosis, 9th ed: American College of Chest Physicians evidence-based clinical practice guidelines. Chest. 2012 Feb;141(2 Suppl):e227S-77S. [199 references] PubMed

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Lee AY, Levine MN. Venous thromboembolism and cancer: risks and outcomes. Circulation. 2003 Jun 17;107(23 Suppl 1):I17-21. PubMed

Lyman GH, Khorana AA, Kuderer NM, Lee AY, Arcelus JI, Balaban EP, Clarke JM, Flowers CR, Francis CW, Gates LE, Kakkar AK, Key NS, Levine MN, Liebman HA, Tempero MA, Wong SL, Prestrud AA, Falanga A, American Society of Clinical Oncology Clinical Practice. Venous thromboembolism prophylaxis and treatment in patients with cancer: American Society of Clinical Oncology clinical practice guideline update. J Clin Oncol. 2013 Jun 10;31(17):2189-204. PubMed

Merli G, Spiro TE, Olsson CG, Abildgaard U, Davidson BL, Eldor A, Elias D, Grigg A, Musset D, Rodgers GM, Trowbridge AA, Yusen RD, Zawilska K, Enoxaparin Clinical Trial Group. Subcutaneous enoxaparin once or twice daily compared with intravenous unfractionated heparin for treatment of venous thromboembolic disease. Ann Intern Med. 2001 Feb 6;134(3):191-202. PubMed

Type of Evidence Supporting the Recommendations

The type of evidence supporting the recommendations is not specifically stated. Strong evidence (i.e., phase III clinical trials and randomized controlled trials as well as the latest [2013] American Society of Clinical Oncology [ASCO] clinical practice guideline) was used to inform the recommendations; however, in the absence of strong evidence, lower quality studies (i.e., retrospective case series) were considered only in the context of consensus opinion.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate prophylaxis and treatment of venous thromboembolism (VTE) in patients undergoing treatment for solid tumours

Potential Harms

- The most common side effect of anticoagulant therapy is bleeding. According to a meta-analysis, the rate of major bleeding with low-molecular-weight heparin (LMWH) is only slightly greater than that of placebo (2.5% versus 1.7%). As compared to unfractionated heparin (UFH), the risk of major bleeding with LMWH is not significantly different (relative risk [RR]=0.95; 95% confident interval [CI] 0.51-1.77). The risk of bleeding from antithrombotic therapy must be weighed against the possible therapeutic benefits; however, overall anticoagulant therapy appears to be safe in patients without active bleeding. Major bleeding associated with enoxaparin, dalteparin, and tinzaparin is low (<1%). The use of LMWH should be cautioned in patients with renal impairment (i.e., creatinine clearance ≤30 mL/min). Accumulation of LMWH can occur in patients with impaired renal function as a result of reduced excretion; this results in an increased risk of bleeding.
- The first follow-up complete blood count (CBC) should be checked within 5 to 10 days of starting either LMWH or UFH to assess for heparin-induced thrombocytopenia (HIT), a rare but life threatening complication of heparin-based therapy.
- Refer to the original guideline document for challenges with using LMWH in patients with liver cirrhosis, patients with an inferior vena cava (IVC) filter, patients scheduled for surgery, patients with thrombocytopenia or HIT, obese patients, and patients with incidental venous thromboembolism (VTE).

Contraindications

Contraindications

Contraindications

- A history of confirmed or suspected heparin-induced thrombocytopenia (HIT) is a contraindication for use of low molecular-weight heparin (LMWH) and unfractionated heparin (UFH).
- Treatment with antithrombotic therapy is contraindicated in patients with life-threatening bleeding or severe thrombocytopenia.
- Contraindications to anticoagulation include a high risk for bleeding, current bleeding, and severe thrombocytopenia.

Qualifying Statements

Qualifying Statements

The recommendations contained in this guideline are a consensus of the Alberta Provincial Tumour Program and are a synthesis of currently accepted approaches to management, derived from a review of relevant scientific literature. Clinicians applying these guidelines should, in consultation with the patient, use independent medical judgment in the context of individual clinical circumstances to direct care.

Implementation of the Guideline

Description of Implementation Strategy

- Post the guideline on the Alberta Health Services Web site.
- Send an electronic notification of the new guideline to all members of CancerControl Alberta.

Implementation Tools

Clinical Algorithm

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Living with Illness

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

Alberta Provincial Tumour Program. Prophylaxis and treatment of venous thromboembolism in patients undergoing treatment for solid tumours. Edmonton (Alberta): CancerControl Alberta; 2014 Feb. 19 p. (Clinical practice guideline; no. SUPP-006). [88 references]

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2014 Feb

Guideline Developer(s)

CancerControl Alberta - State/Local Government Agency [Non-U.S.]

Source(s) of Funding

CancerControl Alberta

Guideline Committee

Alberta Provincial Tumour Program

Composition of Group That Authored the Guideline

Members of the Alberta Provincial Tumour Program include medical oncologists, radiation oncologists, surgeons, nurses, pathologists, physiotherapists, and pharmacists

Financial Disclosures/Conflicts of Interest

Participation of members of the Alberta Provincial Tumour Program in the development of this guideline has been voluntary and the authors have not been remunerated for their contributions. There was no direct industry involvement in the development or dissemination of this guideline. CancerControl Alberta recognizes that although industry support of research, education and other areas is necessary in order to advance patient care, such support may lead to potential conflicts of interest. Although some members of the Alberta Provincial Tumour Program are involved in research funded by industry or have other such potential conflicts of interest, the guideline writers are satisfied it was developed in an unbiased manner.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the Alberta Health Services Web site .

Availability of Companion Documents

The following is available:

- Guideline utilization resource unit handbook. Edmonton (Alberta): CancerControl Alberta; 2013 Jan. 5 p. Electronic copies: Available from the Alberta Health Services Web site .

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on August 12, 2014. The information was verified by the guideline developer on September 25, 2014.

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